

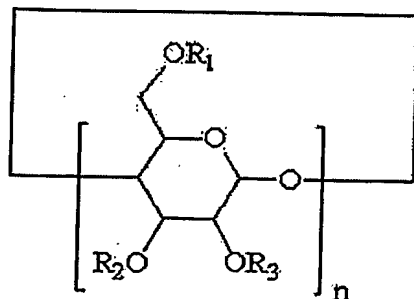
**What is claimed is:**

1. In an ultra-low dielectric film for a copper interconnect prepared using an organic or inorganic matrix and a cyclodextrin-based template for pore formation, the improvement comprises: said ultra-low dielectric film is prepared by coating  
5 with an organic-inorganic mixed solution containing in an organic solvent 40-70 vol% of a polyalkyl silsesquioxane precursor or its copolymer as the matrix and 30-60 vol% of acetylcyclodextrin nanoparticles as the template.

2. The ultra-low dielectric film for a copper interconnect according to claim 1,  
10 wherein said polyalkyl silsesquioxane copolymer is a copolymer of alkyltrialkoxysilane and  $\alpha,\omega$ -bistrialkoxysilylalkane.

3. The ultra-low dielectric film for a copper interconnect according to claim 2,  
15 wherein said polyalkyl silsesquioxane copolymer is a copolymer of methyltrimethoxysilane and  $\alpha,\omega$ -bistrimethoxysilylethane or a copolymer of methyltrimethoxysilane and  $\alpha,\omega$ -bistriethoxysilylethane.

4. The ultra-low dielectric film for a copper interconnect according to claim 1,  
wherein said acetylcyclodextrin is represented by the following formula 3:



(3)

wherein  $n$  is an integer of 6-8;  $R_1$ ,  $R_2$  and  $R_3$  are independently a hydrogen atom or an acetyl group; and at least one of  $R_1$ ,  $R_2$  and  $R_3$  is an acetyl group.

- 5      5. The ultra-low dielectric film for a copper interconnect according to claim 4, wherein said acetylcyclodextrin is selected from the group consisting of triacetyl- $\alpha$ -cyclodextrin, triacetyl- $\beta$ -cyclodextrin, triacetyl- $\gamma$ -cyclodextrin, diacetyl- $\alpha$ -cyclodextrin, diacetyl- $\beta$ -cyclodextrin, diacetyl- $\gamma$ -cyclodextrin, monoacetyl- $\alpha$ -cyclodextrin, monoacetyl- $\beta$ -cyclodextrin and monoacetyl- $\gamma$ -cyclodextrin.
- 10     6. The ultra-low dielectric film for a copper interconnect according to claim 1, wherein said organic solvent is selected from the group consisting of dimethylformamide (DMF), dimethylacrylamide (DMA) and dimethylsulfoxide (DMSO).
- 15     7. The ultra-low dielectric film for a copper interconnect according to any one of claims 1-6, wherein said ultra-low dielectric film has a maximum porosity of 60% and a minimum dielectric constant of 1.5.